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Two New Species of the Sawfly Genus *Tenthredo* (Hymenoptera, Tenthredinidae) from Japan

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Abstract Two new species of the sawfly genus *Tenthredo* are described and illustrated from Japan: *Tenthredo* (*Temuledo*) *togashii* Kumamoto et Shinohara from Honshu and Kyushu, and *Tenthredo* (*Tenthredo*) *vespula* Kumamoto et Shinohara from Honshu.

Key words: Hymenoptera, Tenthredinidae, *Tenthredo*, new species, Japan.

Tenthredo Linnaeus, 1758, is the largest genus of sawflies represented by more than 700 world species (Smith, 1979). In Japan about 80 species occur, some of them still being undescribed. We will describe two new species in the following lines.

Subgeneric classification of the genus *Tenthredo* has not been well established on the world basis. Zhelochovtsev's (1988) attempt to classify western Palearctic forms has been accepted by most recent workers dealing with the Palearctic fauna (e.g., Taeger, 1991; Zhelochovtsev & Zinovjev, 1996), and seems quite successful as far as the western Palearctic species are concerned. General applicability of his system to the Oriental or southeastern Palearctic forms, which share a larger part of the Japanese fauna, remains to be seen, but in any case Zhelochovtsev's classification has set an excellent basis for further studies on this subject. In this paper we have tried to apply Zhelochovtsev's subgenera to the new species.

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Tenthredo (Temuledo) togashii Kumamoto et Shinohara, sp. nov.

[オオシロモンハバチ]

(Figs. 1 A–B, 2 A–C, E–G, 3 A–B)

Female (holotype). Length 14.5 mm. Head (Fig. 2 A–B) creamy white, with large round mark covering most of frons and postocellar area and occiput except for borders with postocellar area black. Mouth parts creamy white, with stipes and apex of mandible blackish. Antenna black, with very narrow longitudinal pale line on upper or outer surface of scape. Thorax black, with the following creamy white: posterior margin, small spot near spiracle and large mark on lateral surface of pronotum, anterior margin of tegula, small spot on each side of mesoscutal median lobe, small spot on inner anterior margin of each mesoscutal lateral lobe, obscure spot in posterior part of each mesoscutal lateral lobe close to mesoscutellum, very narrow posterior margin of each mesoscutal lateral lobe (ridge extending from each posterior corner of mesoscutellum), both sides of mesoscutellum, narrow posterior margin of scutellar appendage, cenchrus, and narrow posterior margin of metanotal lateral lobe, and obscure spot on metepisternum. Fore and mid legs creamy white, with coxae except apices, underside of fore trochanter, anterior surface of fore femur, and posterior surface of mid femur black; small spot on mid trochanter, apically widening line on dorsal surface of each of fore and mid tibiae, and dorsal surface of each segment (except terminal one) of fore and mid tarsi blackish. Hind leg black, with apex of coxa, trochanter, base and small spot at apex of femur, underside of tibia except at apex, and apical segment of tarsus creamy white. Claws of all legs creamy white, with blackish apex. Wings hyaline with apical 2/5 infuscated (Fig. 1); veins black; veins C and R1, and stigma pale brown. Abdomen (Figs. 1, 2 E) black; posterior margin of propodeum medially, posterior 1/3 of terga 3 and 4, lateral parts of terga 3 to 6, narrow elongate mark along posterior margin of tergum 7, median parts of posterior 1/2 of terga 8 and 9, spot at ventral margin of tergum 9 near sawsheath, and sterna 3 to 5 creamy white.

Head smooth, with very sparse, minute punctures; gena with rather dense uniform minute punctures and smooth interspaces, ventral margin and malar space coriaceous; head covered with pale hairs, those on clypeus, labrum and mandible very long. Occipital carina complete; postocellar area about 5/7 as long as wide; postocellar, interocellar and lateral furrows shallow but distinct; postocellar furrow slightly curved; OOL:POL:OCL about 11:3:11; lateral fovea indistinct, indicated only by a small tubercle; frontal area convex with no tubercles or ridges, shallowly concave just below anterior ocellus; clypeus with incision rounded, about 5/12 as deep as length of clypeus, each lateral lobe irregularly shallowly dentate at apex; malar space narrow, about 1/2 as broad as ocellar diameter. Antenna about 2.1 times as long as width of head, longer than

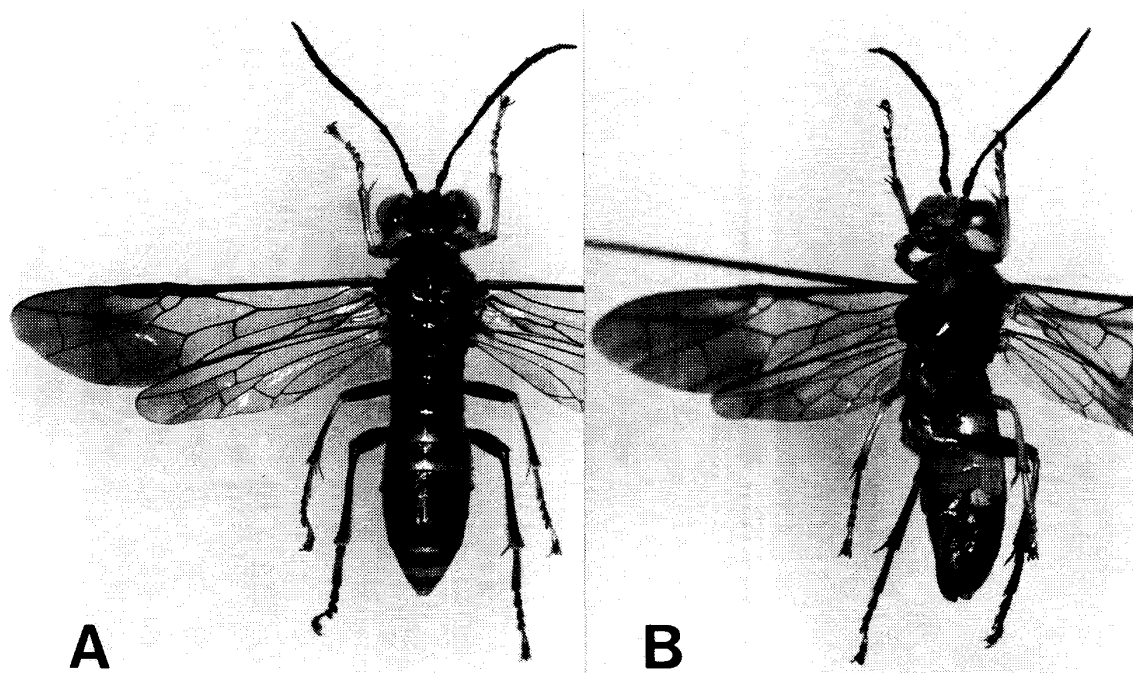


Fig. 1. *Tenthredo (Temuledo) togashii* Kumamoto et Shinohara, sp. nov., ♀, holotype.

head and thorax combined but slightly shorter than abdomen, slightly compressed and slightly but distinctly thickened midapically, in flagellum widest near apex of segment 5 in lateral view, with segments 6 and 7 each of subequal width throughout, scarcely thickened at apex (Fig. 2 C); relative lengths of segments about 9:6:24:20:18:11:9:8:8.

Pronotum with indistinct shallow punctures, almost smooth; mesonotum densely covered with small punctures, with the exception of nearly impunctate large median area including posterior part of median lobe and adjacent part of lateral lobe, interspaces between punctures generally about as long as diameter of each puncture on anterior part of median lobe and lateral part of lateral lobe; mesoscutellum roundly elevated, rather low, with punctures like mesoscutal lateral lobe or less conspicuous; scutellar appendage not carinate, with large distinct irregular punctures; mesepisternum roundly, rather strongly swollen, not distinctly ridged, with rather dense, small punctures, those in anterior and dorsal part sparse and indistinct, nearly smooth between punctures; "mesosternum" without thorns; metascutellum nearly smooth, with a few indistinct punctures. Tarsal claw long, with inner tooth thicker but shorter than outer one, with low triangular basal lobe (or basal margin ventrally triangularly produced).

Abdominal terga weakly coriaceous; propodeum nearly smooth. Sawsheath as in Fig. 2 G. Saw as in Fig. 3 A-B.

Male. Unknown.

Distribution. Japan (Honshu, Kyushu).

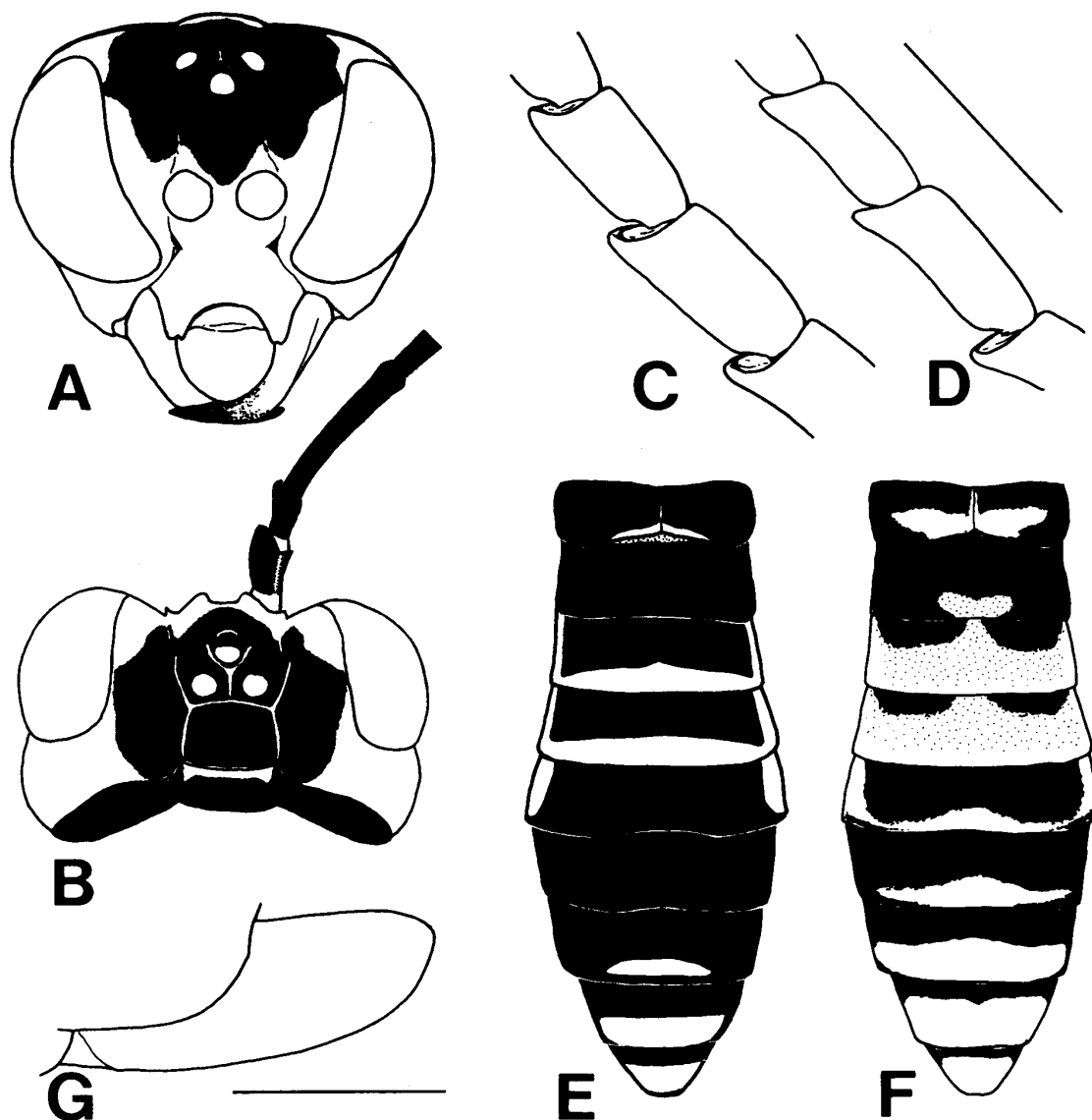


Fig. 2. *Tenthredo (Temuledo) togashii* Kumamoto et Shinohara, sp. nov., ♀, holotype (A–C, E, G), paratype, Mt. Kirishima-yama (F), and *Tenthredo (Temuledo) nigropicta* (Smith, 1874), ♀, Ohara, Kyoto, Honshu (D). — A–B, Head, frontal and dorsal views (width across eyes: 3.8 mm); C–D, antennal segments 6 and 7, lateral view (scale: 1 mm); E–F, abdomen, dorsal view; G, sawsheath, lateral view (scale: 1 mm).

Holotype: ♀, Oomi-one, Kyoto Pref., Honshu, 19. VII. 1986 (H. Kumamoto). Deposited in NSMT.

Paratypes: Honshu: 1 ♀, Mt. Fujikita-yama, Nishinasuno-cho, Tochigi Pref., 31. VII. 1992 (K. Tsuruta), KT; 1 ♀, Hanase, Kyoto Pref., 25. VII. 1951 (S. Ito), UOP; 1 ♀, Mt. Azami-ga-take, Yamaguchi/Shimane Prefs., 26. VII. 1987, YM. Kyushu: 1 ♀, Mt. Kirishima-yama, Miyazaki/Kagoshima Prefs., 25. V. 1966 (K. Kusigemati), MNHS.

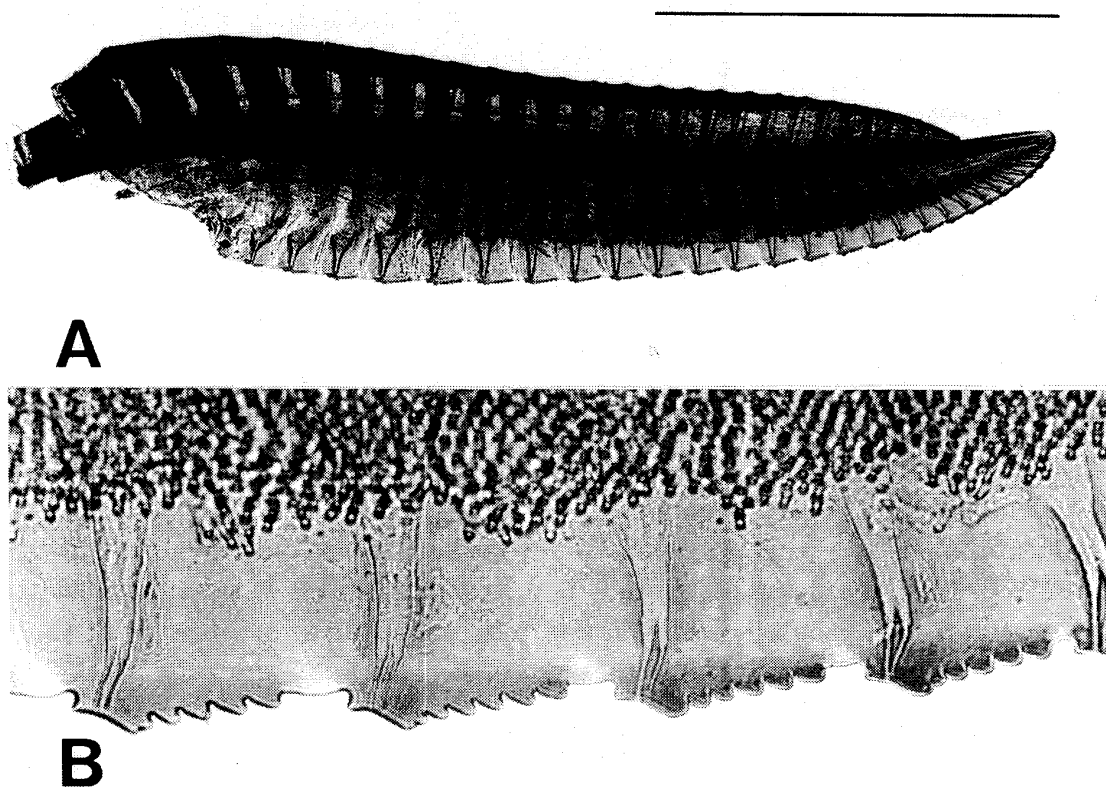


Fig. 3. *Tenthredo* (*Temuledo*) *togashii* Kumamoto et Shinohara, sp. nov., ♀, holotype. A, Lance and lancet, lateral view (scale: 1 mm); B, 13th to 16th teeth of lancet.

Variation. The length varies from 14 to 15.5 mm. The four specimens from Honshu show small variation in color pattern as follows: The pale mark on each mesoscutal lateral lobe close to the mesoscutellum is developed, about as large as the pale spot on the mesoscutellum, in the Hanase specimen; the tegula is almost entirely pale in the Fujikita-yama specimen; the mesepisternum has a small pale spot in its dorsal part in the Fujikita-yama and the Azami-ga-take specimens; and the metepisternum has a large distinct pale mark in all specimens but the holotype. The paratype from Kirishima-yama, the only specimen available from Kyushu, is much paler in coloration of the thorax and abdomen than the Honshu specimens as follows: The small pale spot close to the spiracle and a large spot at the ventral corner of the pronotum are merged into a very large spot covering most of the lateral pronotum; the paired spots on the mesoscutellum and the mark in the adjacent part of each mesoscutal lateral lobe are enlarged and merged into a very large transverse mark traversing posterior part of the mesonotum; the scutellar appendage is entirely pale; the mesepisternum has a large pale marking laterally and the mesepimeron is pale-marked dorsally; the metepisternum is almost entirely pale; the dorsum of the abdomen has a pale color pattern as shown in Fig.

2 F; the terga 3 and 4 are somewhat brownish medially; the lateral margins of each of the propodeum and the terga 2, 7 and 8, and most of the sternum 2 are pale; and the pale spot at the lateral margin of the tergum 9 is very large.

Etymology. This new species is named in honor of Dr. I. Togashi, Tsurugi, who has greatly contributed to the taxonomy of East Asian sawflies.

Remarks. Because of its large size, black and creamy white coloration and apically infuscated wings, this new species resembles the species of the *T. jonoensis* group (Togashi, 1966); however, *T. togashii* is distinguished from the latter by the midapically slightly thickened antenna, entirely creamy white gena and extensively creamy white abdomen. In Malaise (1945), the new species would key to the couplet 120 or 165 but does not agree with any species included therein.

This new species may be closely allied to *T. (Temuledo) nigropicta* (Smith, 1874) but is distinguished from it by the following features:

1. Antenna (Fig. 1) slightly but distinctly thickened midapically, with segments 6 and 7 each of subequal width throughout, scarcely thickened at apex (Fig. 2 C); mesoscutellum and its appendage and metascutellum usually largely black; scutellar appendage with large distinct punctures; lateral part of mesepisternum and mesepimeron mostly or entirely black; hind coxa and usually also mid coxa largely black; fore and mid femora more or less marked with black (Fig. 1 B); forewing with apical 2/5 distinctly smoky (Fig. 1); stigma pale brown. *T. togashii*
- Antenna not distinctly thickened midapically, with segments 6 and 7 each produced below at apex (Fig. 2 D); mesoscutellum and its appendage and metascutellum mostly or entirely pale yellow; scutellar appendage impunctate, polished; lateral part of mesepisternum and mesepimeron mostly pale yellow; mid and hind coxae and fore and mid femora entirely pale yellow; forewing uniformly hyaline; stigma usually blackish brown. *T. nigropicta*

It is not quite convincing to place this species in the subgenus *Temuledo*. The mouth parts of *T. togashii* (and also of *T. nigropicta*) are normal and the antennae are rather long, whereas the mouth parts are protruding and the antennae are short in typical members of *Temuledo*. For the correct subgeneric assignment, it is necessary to examine the still unknown males of the new species.

***Tenthredo (Tenthredo) vespula* Kumamoto et Shinohara, sp. nov.**

[シロオビハバチ]

(Figs. 4 A–B, 5 A–C, 6 A–B)

Female (holotype). Length 11 mm. Robust species, resembling a wasp of the genus *Vespula* in general appearance (Fig. 4). Head (Fig. 5 A–B) black, with the following yellowish white: clypeus, supraclypeal area, outer marginal area of

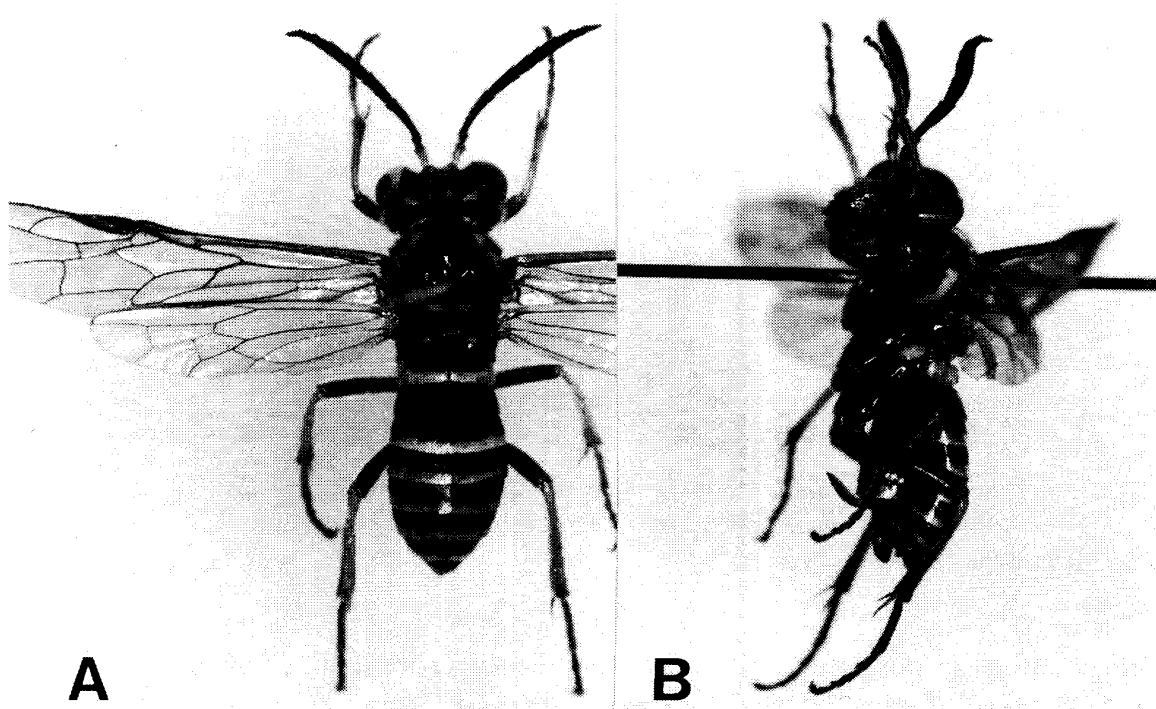


Fig. 4. *Tenthredo (Tenthredo) vespula* Kumamoto et Shinohara, sp. nov., ♀, holotype.

antennal socket, elongate spot above each antenna, both posterolateral corners of postocellar area, subtriangular spot on each temple, and most of gena. Mouth parts mostly blackish; labrum yellowish white. Antenna black, with scape except for minute blackish spot on lower surface and base of pedicel yellowish white. Thorax black, with the following yellowish white: posterior margin and large lateral mark of pronotum, tegula, minute spot on each mesoscutal lateral lobe just in front of anterolateral corner of mesoscutellum, very narrow posterior margin of each mesoscutal lateral lobe (ridge extending from each posterolateral corner of mesoscutellum), medially connected large paired marks covering anterior 1/3 of mesoscutellum, scutellar appendage, large elongate mark extending from anterodorsal corner to median ridge of mesepisternum, cenchrus, two small marks on each metanotal lateral lobe, very narrow posterior margin of metanotal lateral lobe, most of metepisternum, and posterior margin of metepimeron; large subtriangular mark covering posterior part of mesoscutellum reddish brown. Legs black, with the following brownish white: narrow apex of fore coxa, inner (dorsal) surfaces of fore trochanter and femur, outer (dorsal) surface of mid coxa, outer surface of mid trochanter, anterior surface of mid femur, narrow apical margin of hind coxa, outer surface of hind trochanter, and anterior surface of hind femur; all tibiae yellowish white, somewhat brownish apically; underside of hind tibia blackish apically; all tarsi and spurs pale brown. Wings hyaline; veins blackish, though veins C and R1 are brown; stigma brown, darkened basally.

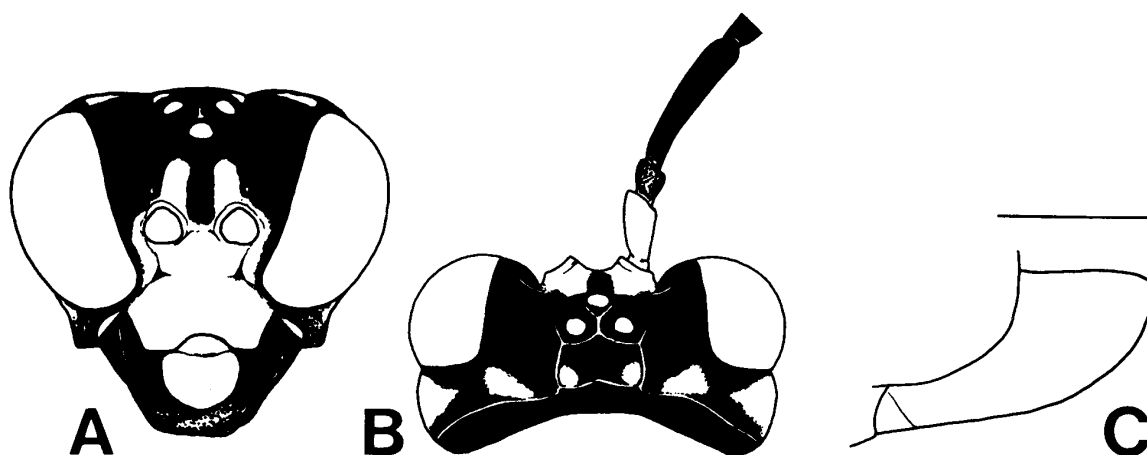


Fig. 5. *Tenthredo (Tenthredo) vespula* Kumamoto et Shinohara, sp. nov., ♀, holotype.
—A–B, Head, frontal and dorsal views (width across eyes: 3.3 mm); C, sawsheath, lateral view (scale: 0.5 mm).

Abdomen black; posterior half and both sides of propodeum, posterior 1/3 to 1/2 of each of terga 3 to 7, narrow posterior margin of tergum 8, and posterior margin of each of sterna 2 to 7 yellowish white.

Head smooth, covered with minute, indistinct punctures and dense, rather long hairs; supraclypeal area nearly impunctate; clypeus and labrum with very sparse punctures each bearing a long seta; gena more densely punctured and less shining than other parts of head. Occipital carina complete, weakly projecting along posterior margin of postocellar area; postocellar area about 3/5 as long as wide, convex; postocellar, interocellar and lateral furrows sharply defined; postocellar furrow obtusely angled at middle; OOL : POL : OCL about 9 : 4 : 7; lateral fovea ill-defined, with tubercle included in lower part of antennal furrow; inner orbit in dorsal view sloping to antennal furrow rather steeply; frontal area weakly elevated; supraantennal tubercle only slightly elevated, continuous to indistinct frontal ridge; clypeus convex, with rounded incision about 3/10 as deep as length; labrum somewhat small, semicircular in outline, very obtusely, roundly pointed at apex; malar space narrow, less than 1/2 as broad as ocellar diameter. Antenna (Fig. 4 A–B) about 1.7 times as long as width of head, about as long as head and thorax combined, thick, somewhat compressed, widest near apex of segment 5, covered with very dense hairs, those on scape pale and those on pedicel and flagellum black, on flagellum longer on dorsal surface; relative lengths of segments about 7 : 5 : 18 : 13 : 10 : 7 : 6 : 5 : 5.

Pronotum with indistinct small punctures; mesonotum with dense, well-separated, small punctures, smooth interspaces generally about as long as diameter of each puncture; posterior 2/3 of notaulus distinctly sunken, forming straight, deep, broad groove; mesoscutellum pyramidally elevated to rounded top, very

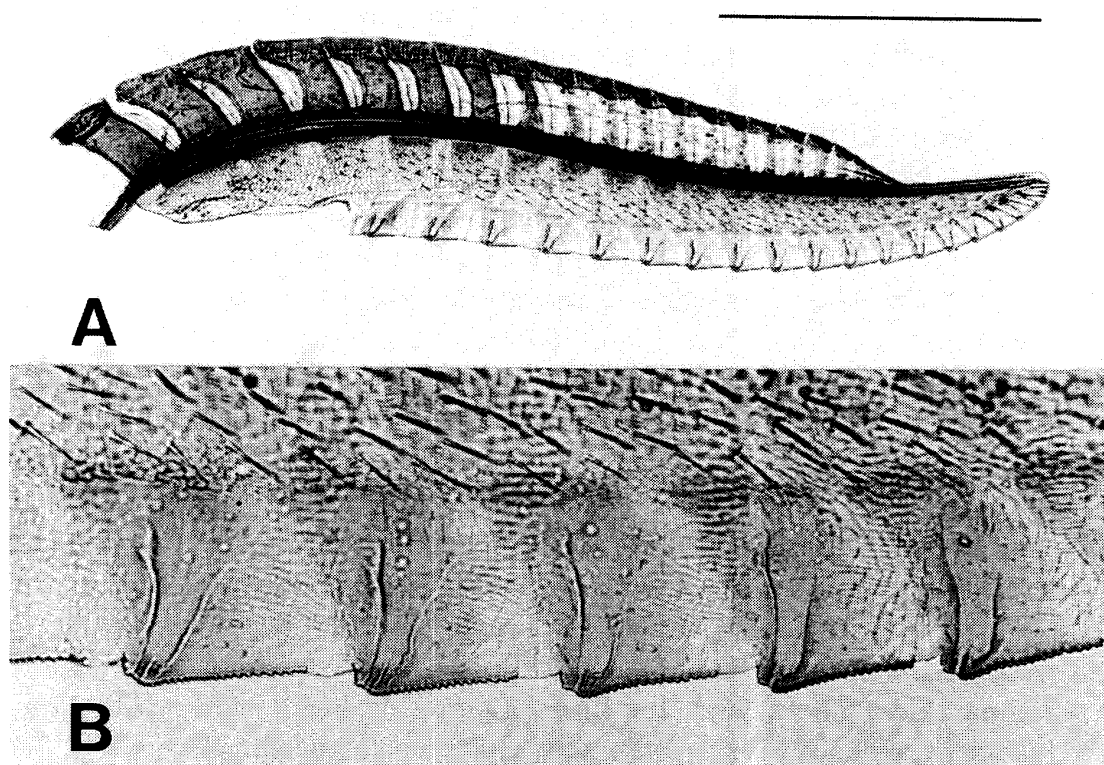


Fig. 6. *Tenthredo (Tenthredo) vespula* Kumamoto et Shinohara, sp. nov., ♀, holotype. A, Lance and lancet, lateral view (scale: 0.5 mm); B, 11th to 15th teeth of lancet.

faintly transversely ridged, anterior surface somewhat rounded, with minute punctures and long hairs, smooth between them; scutellar appendage with dense coarse large punctures; mesepisternum strongly raised to form longitudinally somewhat flattened ridge, with minute rather uniform punctures, interspaces between them smooth, the punctures less distinct and sparser on lateral surface; no thorns on "mesosternum"; metascutellum rather smooth, punctured as in mesoscutellum. Tarsal claw short, with inner tooth thicker but shorter than apical one, with rather inconspicuous basal lobe.

Abdominal terga coriaceous, densely covered with short hairs. Sawsheath as in Fig. 5 C. Saw (Fig. 6) small, about as long as hind basitarsus.

Male. Unknown.

Distribution. Japan (Honshu).

Holotype: ♀, Mt. Kanakuso-dake, Shiga Pref., 4. ix. 1982 (H. Kumamoto). Deposited in NSMT.

Paratypes: 1 ♀, Mt. Kanakuso-dake, Shiga Pref., 18. ix. 1982 (H. Kumamoto), in H. Kumamoto collection; 1 ♀, "11/15, Daisen-ji [? nr. Mt. Daisen, Tottori Pref.], 1937. 8. 25, T. Nakanishi", NSMT.

Variation. The paratopotype is almost indistinguishable from the holotype.

The paratype from Daisen-ji is also similar to the holotype but a little smaller (length 10.5 mm) and has the blackish spot on the venter of antennal scape more developed, the pale area on the pedicel reduced, and the stigma pale brown.

Etymology. The new specific name refers to the similar general appearance of the new species to the wasp of the genus *Vespula*.

Remarks. This new species may belong to the *T. scrophulariae-marginella* group of the subgenus *Tenthredo*. It agrees with the diagnosis of the species group given by Taeger (1988), except that in the new species as well as in *T. smithii* Togashi, 1977, which was included in the species group by Taeger, the shortest flagellar segment, the 4th or 5th, is still distinctly longer than wide.

Tenthredo vespula closely resembles *T. smithiana*, to which it runs in Taeger's (1988) key to the Palearctic species of the *T. scrophulariae-marginella* group, although there is disagreement in the color of antennal pedicel in the couplet 7(6). In Malaise's (1945) key, the new species may go to couplet 156, which contains *T. hummeli* (Malaise, 1934), "*T. erasa* Malaise, 1945" [= *T. mongolica* (Jakovlev, 1892)], and *T. erasina* Malaise, 1945. These species also belong to the same species group and are included in Taeger's key (1988). The new species differs from *T. smithiana* as follows:

1. Antenna thick, about 1.65–1.7 times as long as head width, with largely blackish pedicel (Fig. 4); supraclypeal area yellowish white (Fig. 5 A); tegula entirely yellowish white; mesepisternum with large yellowish white mark extending from anterodorsal corner to median elevated part (Fig. 4 B); scutellar appendage with dense coarse large punctures; propodeum and abdominal terga 3 to 7 each with broad posterior margin and tergum 8 with narrow posterior margin yellowish white (Fig. 4); saw about as long as hind basitarsus. *T. vespula*
- Antenna thin, about 1.4–1.45 times as long as head width, with entirely yellow pedicel; supraclypeal area black; tegula blackish, only outer margin yellowish white; mesepisternum with rather small yellowish white mark anterodorsally; scutellar appendage without distinct punctures; propodeum and abdominal tergum 4 each with broad posterior margin and terga 5 to 8 each with very narrow posterior margin yellowish white; saw much longer than hind basitarsus. *T. smithiana*

Tenthredo smithiana and *T. vespula* are two of the three Japanese *Tenthredo* known to occur only in autumn. These two sawflies are certainly mimics of some wasps, probably *Vespula* in the case of *T. vespula*, which are commonly encountered afield in this season. The third Japanese species of *Tenthredo* occurring in autumn is *T. (Tenthredella) alboannulata* (Takeuchi, 1933), which is a slender black species with very long, black and medially whitish antennae, showing close resemblance to some ichneumonflies in life.

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